What is claimed is:

[c01] 1. A sampling method for shortening readout time and reducing lag in amorphous silicon flat panel x-ray detectors, the method comprising the steps:

(a) activating a reset switch to discharge any residual signal being held in a feedback capacitor;

(b) deactivating the reset switch;

(c) activating a field effect transistor;

(d) sampling an electrical signal from the amorphous silicon flat panel x-ray detector, while the field effect transistor is activated;

(e) activating a reset switch, after the electrical signal has been sampled and while the field effect transistor is still activated, to discharge any residual signal being held in the feedback capacitor;

(f) deactivating the field effect transistor, while the reset switch is still activated;

(g) deactivating the reset switch; and

(h) repeating steps (c)–(g) as necessary to obtain a predetermined radiographic image.

[c02] 2. The sampling method of claim 1, wherein the electrical signal is sampled while the field effect transistor is activated in a manner that eliminates the need for FET-off settling time before sampling.

[c03] 3. The sampling method of claim 1, wherein the field effect transistor is deactivated while the reset switch is activated in a manner that reduces lag, as compared to the lag in conventional amorphous silicon flat panel x-ray detectors.

[c04] 4. The sampling method of claim 1, wherein the sampling method allows frame rates in excess of 30 frames per second to be achieved.

[c05] 5. The sampling method of claim 1, wherein the sampling method requires less line time than conventional amorphous silicon flat panel x-ray detector sampling methods.

[c06] 6. A system for shortening readout time and reducing lag in amorphous silicon flat panel x-ray detectors, the system comprising:

(a) a means for activating a reset switch to discharge any residual signal being held in a feedback capacitor;

(b) a means for deactivating the reset switch;

(c) a means for activating a field effect transistor;

(d) a means for sampling an electrical signal from the amorphous silicon flat panel x-ray detector, while the field effect transistor is activated;

(e) a means for activating a reset switch, after the electrical signal has been sampled and while the field effect transistor is still activated, to discharge any residual signal being held in the feedback capacitor;

(f) a means for deactivating the field effect transistor, while the reset switch is still activated;

(g) a means for deactivating the reset switch; and

(h) a means for repeating steps (c)–(g) as necessary to obtain a predetermined radiographic image.

[c07] 7. The system of claim 6, wherein the electrical signal is sampled while the field effect transistor is activated in a manner that eliminates the need for FET-off settling time before sampling.

[c08] 8. The system of claim 6, wherein the field effect transistor is deactivated while the reset switch is activated in a manner that reduces lag, as compared to the lag in conventional amorphous silicon flat panel x-ray detectors.

[c09] 9. The system of claim 6, wherein frame rates in excess of 30 frames per second are achievable.

[c10] 10. The system of claim 6, wherein the system requires less line time than required in conventional amorphous silicon flat panel x-ray detectors.

[c11] 11. A sampling method for shortening readout time and reducing lag in amorphous silicon flat panel x-ray detectors, the method comprising: obtaining an electrical sample during a FET-on period, switching to a FET-off period after the electrical sample is obtained, and allowing a RESET-on period to overlap both the FET-on period and the FET-off period for a predetermined period of time.

[c12] 12. The sampling method of claim 11, wherein the electrical signal is sampled during the FET-on period so that there is no need for the FET-off period before obtaining the electrical sample.

[c13] 13. The sampling method of claim 11, wherein the FET-off period begins during the RESET-on period to reduce lag, as compared to the lag in conventional amorphous silicon flat panel x-ray detectors.

[c14] 14. The sampling method of claim 11, wherein the sampling method allows frame rates in excess of 30 frames per second to be achieved.

[c15] 15. The sampling method of claim 11, wherein the sampling method requires less line time than conventional amorphous silicon flat panel x-ray detector sampling methods.

[c16] 16. A system for shortening readout time and reducing lag in amorphous silicon flat panel x-ray detectors, the system comprising: a means for obtaining an electrical sample during a FET-on period, a means for switching to a FET-off period after the electrical sample is obtained, and a means for allowing a RESET-on period to overlap both the FET-on period and the FET-off period for a predetermined period of time.

[c17] 17. The system of claim 16, wherein the electrical signal is sampled during the FET-on period so that there is no need for the FET-off period before obtaining the electrical sample.

[c18] 18. The system of claim 16, wherein the FET-off period begins during the RESET-on period to reduce lag, as compared to the lag in conventional amorphous silicon flat panel x-ray detectors.

[c19] 19. The system of claim 16, wherein frame rates in excess of 30 frames per second are achievable.

[c20] 20. The system of claim 16, wherein the system requires less line time than required in conventional amorphous silicon flat panel x-ray detectors.